

RINGNECK PIT
Warrick County
2006 Fish Management Report

Michelle L. Weinman
Assistant Fisheries Biologist



Fisheries Section
Indiana Department of Natural Resources
Division of Fish and Wildlife
I. G. C.-South, Room W273
402 W. Washington Street
Indianapolis, IN 46204

2007

EXECUTIVE SUMMARY

- A general lake survey was conducted at Ringneck Pit on July 5 and 6, 2006. An aquatic vegetation survey was conducted on July 26, 2006.
- The Secchi disk reading was 2.5 ft and dissolved oxygen concentrations were low. The conductivity was 1,252 μ S.
- Submerged aquatic vegetation was found to a maximum depth of 7.0 ft. Coontail and Eurasian watermilfoil were the dominant plants occurring at over 80% of the sites. Filamentous algae was present at 72% of the sites.
- A total of 349 fish, representing 8 species, was collected. Gizzard shad ranked first by number followed by bluegill and largemouth bass.
- Only 16 largemouth bass were sampled. Bluegill growth was good.
- The DFW should maintain the current fishing regulations.
- An aquatic vegetation control program should be initiated in 2007.

INTRODUCTION

Ringneck Pit is an 8.5-acre impoundment located in Blue Grass Fish and Wildlife Area (BGFWA), 1.5 mi from the Town of Daylight in Warrick County. The lake is owned by the Indiana Department of Natural Resources (IDNR), Division of Fish and Wildlife (DFW). The BGFWA was acquired by the IDNR in August 2000. Angler access includes a gravel boat ramp and shoreline fishing along the county road. No outboard motors are allowed. Maps of the property are available at hunter information stations throughout the property or online at <http://www.in.gov/dnr/fishwild/publications/bluegrass.pdf>. Ringneck Pit's fishery is regulated by the state's standard bag and length limits.

The general survey in 2002 revealed that this pit provided good bluegill and redear sunfish fishing and adequate catch-and-release opportunities for largemouth bass. In addition, a low-level gizzard shad population was present.

METHODS

A standard fisheries survey was conducted on July 5 and 6, 2006. The lake's physical and chemical characteristics were measured according to DFW guidelines (Shipman 2001). Submersed aquatic vegetation was sampled on July 26 following Pearson's guidelines (2004). A GPS was used to record the location of all the sampling sites.

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.37 h, one trap net lift, and one experimental-mesh gill net lift. Only one gill net lift was used because there was limited space due to the amount of aquatic vegetation and DO levels. All fish collected were measured to the nearest 0.1 in TL. Average weights were estimated by using the Fish Management District 7 averages. Fish scale samples were taken from a subsample of sport fish for age and growth analysis. Proportional stock density and relative stock density were not calculated for any species due to limited sample size.

RESULTS

Ringneck Pit is a shallow lake with a maximum depth of 14.0 ft. At the time of the survey, the lake was turbid with a Secchi disk reading of 2.5 ft. Dissolved oxygen

concentrations were low with a maximum reading of 4.7 ppm, however, this was measured in the morning when DO concentrations are at the lowest levels. The conductivity was 1,252 μ S.

Submerged aquatic vegetation was found to a depth of 7.0 ft and all littoral sites possessed vegetation. The overall mean rake score was 2.11. Coontail and Eurasian watermilfoil were the dominant plants, occurring at over 80% of the sites. Sago pondweed was also present, but only found at 5% of the sites. Coontail had the highest mean rake score of 1.67. Emergent plants observed were phragmites, cattail spp., creeping water primrose, duckweed, and bulrush spp. Filamentous algae was found at 72% of the sites.

A total of 349 fish, representing 8 species, was collected that weighed approximately 109 lbs. Gizzard shad ranked first (66%) by number, followed by bluegill (22%), largemouth bass (5%), and redear sunfish (4%). Gizzard shad also ranked first by weight (63%), followed by largemouth bass (23%), bluegill (10%), and redear sunfish (2%). Golden shiner, redbfin shiner, yellow bullhead, and black bullhead combined for 3% of the collection by number.

A total of 231 gizzard shad was sampled that weighed 69 lbs. They ranged in length from 5.5 to 13.8 in. Only 12 gizzard shad were sampled in 2002. Catch rates by gear type were 275.7/electrofishing h, 126.0/gill net lift, and 3.0/trap net lift.

A total of 78 bluegill was sampled that weighed 11 lbs. They ranged in length from 1.1 to 7.5 in. Catch rates by gear type were 2.7/electrofishing h, 9.0/gill net lift, and 67.0/trap net lift. The electrofishing catch rate in 2002 was 511.6/h. Bluegill growth was average with age-5 and age-6 bluegill averaging 6.9 and 7.2 in. Bluegill growth was similar to 2002.

A total of 16 largemouth bass was sampled that weighed 25 lbs. They ranged in length from 11.0 to 20.2 in. The electrofishing catch rate was 43.4/h, and no bass were caught in nets. The electrofishing catch rate in 2002 was 130.2/h. No age-1 or age-2 bass were sampled. Of the few largemouth bass aged, growth appears to be good for all ages, except age 6 which averaged 14.5 in.

Thirteen redear sunfish were sampled that weighed 2 lbs. They ranged in length from 4.9 to 8.3 in. Catch rates by gear type were 5.4/electrofishing h, 2.0/gill net lift, and 9.0/trap net lift. The catch rates in 2002 were 265.1/electrofishing h, 3.0/gill net lift, and 8.5/trap net lift. Redear growth was slow. Age-4 and age-5 redear averaged 5.3 and 6.8 in.

DISCUSSION

Ringneck Pit's fishery has undergone substantial changes since 2002. Gizzard shad relative abundance by number increased from 2 to 66%, and they are now the dominant species. Bluegill, largemouth bass, and redear sunfish abundances have decreased due to the large number of shad sampled. The electrofishing catch rate was low due to the high conductivity. The conductivity in 2002 was 1,635 μS , which should result in lower electrofishing catch rates than 2006, however, a different electrofishing boat was used in 2002. The other boat may have been more effective at stunning fish in high conductivity water. The trap net and gill net catch rates were similar or higher than in 2002.

Bluegill size structure is good with 23% of bluegill collected being 7 in or longer. Bluegill should provide good fishing as long as growth is maintained. However, gizzard shad are known to negatively affect bluegill growth by competing for the same food resources (Aday et al. 2003), resulting in slow growing bluegill populations.

Not enough bass were sampled to adequately evaluate the fishery. However, one positive result was that more bass greater than 14 in were sampled in 2006 versus 2002. The current largemouth bass regulations should be maintained to protect small bass and to ensure adequate predation on gizzard shad.

Aquatic vegetation levels were high enough to impact angler access and negatively influence the fishery. The excessive vegetation reduces the ability of bass to prey on bluegill and gizzard shad (Bettoli et al. 1992), which results in poor growth for both bass and bluegill. It is recommended that the district fisheries biologist eliminate all the aquatic plants on the south and west shorelines annually starting in 2007.

RECOMMENDATIONS

- The DFW should maintain the current fishing regulations
- Aquatic vegetation control program should be initiated in 2007.

LITERATURE CITED

- Aday, D. D., R. J. H. Hoxmeier, and D. H. Wahl. 2003. Direct and indirect effects of gizzard shad on bluegill growth and population size structure. *Transactions of the American Fisheries Society* 132:47-56.
- Bettoli, P. W., M. J. Maceina, R. L. Noble, and R. K. Betsill. 1992. Piscivory in largemouth bass as a function of aquatic vegetation abundance. *North American Journal of Fisheries Management* 12:509-516.
- Pearson, J. 2004. A proposed sampling method to assess occurrence, abundance, and distribution of submersed aquatic plants in Indiana lakes. Indiana Department of Natural Resources. Indianapolis, Indiana. 37 pp.
- Shipman, S. 2001. Manual of fishery survey methods. Indiana Department of Natural Resources. Indianapolis, Indiana. 67 pp.

Submitted by: Michelle L. Weinman, Assistant Fisheries Biologist
Date: October 4, 2006

Approved by: Daniel P. Carnahan, Fisheries Biologist

Approved by: _____
Brian M. Schoenung, Fisheries Supervisor
Date: January 24, 2007

APPENDIX